Arts Education

Big Sky Arts Education

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Moving from STEM to STEAM

My head swims in acronyms. Every day I come across acronyms used in state government, in public education, and in the arts world.

Example: "I sat in on a SAEDAE conference call concerning the NCCAS work on the NCAS. I worked on the POL budget and reviewed AISC grant reports. Then I read some interesting research on AI and the CCSS posted on the NASAA list serv." Whew.

STEM and STEAM are two important acronyms I come across on a daily basis. STEM stands for Science, Technology, Engineering and Math, and is a movement to encourage career-readiness and innovation in technology-related fields. STEAM is the same acronym with an "A" thrown in, which stands for "Arts."

Many believe the arts must be part of the STEM conversation, because not only do the arts spur creative thinking and innovation, but the arts also develop the habits of mind that future scientists and engineers need to innovate in the next century.

Whatever the future of the acronyms (which tend to come and go in the education world), these key ideas behind the STEM to STEAM movement should remain for arts education advocates:

• **The arts and science do not exist in opposition to each other**. It is not a struggle between "left-brain" and "right-brain" thinkers, or between logic and emotion. Consider Leonardo daVinci: was he an artist or a scientist? In his day, he didn't have to choose. For daVinci, both scientific inquiry and artistic exploration led to innovation.

The idea that schools have to choose to focus on either STEM or the arts is false. As astronaut Mae Jemison said in an excellent TED Talk: "Science provides a personal understanding of a universal experience. Arts provide a universal understanding of a personal experience." They can, and should, coexist.

• **Artists and scientists are often using the same processes**. John Maeda, president of the Rhode Island School of Design and a founder of the STEAM movement, notes that open-ended inquiry, failure as part of the process, and learning by a continuous feedback loop between thinking and doing are the work of both artists and scientists.

A choreographer creating a new dance, and a computer engineer designing a new app are using similar processes of inquiry and problem solving.

• **The arts can be a pathway to increased engagement in STEM subjects**. For those students who cry "math is boring!" the arts can be a hook to get students interested by creating real-world contexts to use their STEM knowledge.

• **The arts develop habits of mind that lead to successful STEM careers**. Research shows that employers in STEM companies place high value on employees with 21st century skills: creativity, critical thinking, collaboration and communication – all skills that are developed in high-quality arts learning experiences.

Given the many ways that the arts and science intersect, what are the best strategies to ensure that the Arts take their rightful place alongside STEM in school curriculum*?* I don't know the right answer, and yet, and I am one of many people working on the problem. I do know that it will take advocacy and diligent work from parents, students, teachers, administrators, artists and scientists to convince policy makers that the "A" for arts belongs in STEM. Full STEAM ahead!

Share your thoughts and ideas about STEM to STEAM with me at ekohring@mt.gov or send me a tweet @BigSkyArtsEd.

Bigfork students blend math and dance in a class led by CoMotion Dance.

Dancing and doing math like no one is watching

The *Bozeman Daily Chronicle* featured an article Nov. 20 about how Hawthorne Elementary School in Bozeman is helping students succeed under the new Common Core standards by embracing an arts-integrated approach to learning. Hawthorne has been using the arts to teach for 22 years now. The principal, Casey Bertram, believes "robust 21st century teaching cannot happen without the arts." Amen to that!

Hawthorne is not the only school in Montana embracing a schoolwide approach to the arts: Jefferson Elementary in Helena has also adopted this approach under the leadership of their principal, Lona Carter-Scanlon, a passionate arts education advocate.

Examples of how arts learning is working to help students find greater success in school are all over Montana. I was recently lucky to witness robust 21st century teaching in action when I visited Rattlesnake Elementary in Missoula to see the CoMotion Dance Project work with a classroom of second graders.

CoMotion Dance Project is led by University of Montana dance professor Karen Kaufmann and places teaching artists in schools to help teachers meet learning goals using dance and creative movement. The Montana Arts Council funds CoMotion through its Artists in Schools and Communities grant program.

The day's lesson was on place value, and teaching artist Jordan Dehline led a dance-based lesson that helped cement the concept, particularly for those students who were struggling with understanding.

Jordan began by leading the students in a high-energy warm-up called the Brain Dance, and then gave students time to explore two dance concepts: shape and level.

She then passed out cards to the students that had the place value on them of either 100, 10 or 1. The 100s moved at a high level, the 10s at a medium and the 1s at a low level.

She then asked them to sort themselves into groups according to their place value by dancing to a specified spot, and then freezing in a shape that showed their place value. Once they had all frozen, she asked them to tell her what number they were creating by adding up the 100s, the 10s and then the 1s.

At one point, the students became chatty and unfocused, as second graders sometimes do. Jordan stopped the lesson and reminded them of the one-to-four scale they used to assess their dance work. If they ranked themselves a four that meant that they danced the whole time the music was playing with their best focus. Conversely, a one ranking meant they were not dancing when the music was playing, and they were not paying attention to their work.

When the music started again, the unfocused students jumped up from a one or two to a four immediately. At no point did Jordan scold them – she simply asked them to reflect on their work as dancers and challenged them to improve.

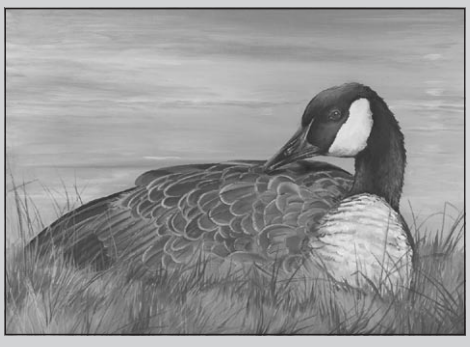
Critics of arts integration often cite a lack of rigor in teaching the art form. Not so in this lesson, which was carefully and elegantly designed to challenge students with learning targets in both dance and math.

It was remarkable to see all the students, girls and boys, fully engaged in dance for an entire 45-minute class. When asked afterward if she felt the dance lesson helped reinforce place value for her students struggling with math, the classroom teacher, a 37-year veteran of the district, gave an emphatic yes.

This model lesson on place value is slated to be published in a 2014 book by Human Kinetics Publishers, *Art of Dance Integration: Mathematics and Science.*

Junior Duck Stamp Program welcomes submissions

As parents and teachers know, a variety of research has shown that creatively engaging children with the natural world on a regular basis can make a huge difference in their health, wellbeing, and ability to learn.



Canada Goose by Carson Collinsworth, 2013 Best of Show winner for Montana

Students who spend more time outdoors in natural areas are more motivated and enthusiastic about learning. Their academic achievement is also higher across multiple subject areas.

The Federal Junior Duck Stamp (JDS) Program integrates this research. It's a dynamic curriculum that teaches wetlands and waterfowl conservation to students from kindergarten through high school, and incorporates scientific and wildlife management principles into a visual arts curriculum geared to both student and teacher.

Participants (any K-12 student attending public, private, home school or art studio) complete a JDS design of a native waterfowl species (drawn on 9" x 12" stock) as their visual "term papers," using visual arts, rather than verbal communication, to articulate what they have learned. Popular mediums or combinations include watercolor, colored pencil, crayon, acrylic and oil paints. All specifics, rules and entry forms are found in the Federal Junior Duck Stamp Art Contest brochure (www.fws.gov/juniorduck/).

All Montana entries must be postmarked/delivered by March 15 to Lee Metcalf National Wildlife Refuge, 4567 Wildfowl Lane, Stevensville, MT 59870 (Attn: Bob Danley).

Three first, second and third place entries are selected for each age group. A "Best of Show" is selected by the judges from the 12 first-place winners regardless of their grade group. Each state or territory Best of Show is then entered into the national Junior Duck Stamp Contest.

Music training sharpens brain pathways, studies say

A story published online Nov. 25 at www.edweek.org reports on new studies released during a recent meeting of the Society for Neuroscience in San Diego:

"At the Youth Orchestra Los Angeles, a student sits poised with her bow at a practiced angle to her violin, her eyes following both the written notation in front of her and the conductor's direction, aware of both her own music and the sounds coming from fellow students' instruments.

"New research suggests that the complexity involved in practicing and performing music may help students' cognitive development. Studies released last month at the Society for Neuroscience meeting in San Diego find that music training may increase the neural connections in regions of the brain associated with creativity, decision-making, and complex memory, and they may improve a student's ability to process conflicting information from many senses at once. Research also found that starting music education early can be even more helpful …"

Read the full story at www.edweek.org.